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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,796	08/21/2003	Mun-Sang Kim	K5675.0013/P013	7393
24998	7590	06/29/2006	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			NGUYEN, HUONG Q	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			3736	
DATE MAILED: 06/29/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/644,796

Applicant(s)

KIM ET AL.

Examiner

Helen Nguyen

Art Unit

3736

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 9-15 is/are rejected.
- 7) ☒ Claim(s) 1-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/20/03, 11/30/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the invention of Group 1, **Claims 1-16** in the reply filed on 6/1/2006 is acknowledged.
2. **Claims 17-20** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in Application No. 10644796, filed on 10/06/2003. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 11/20/2003 and 11/30/2004 is/are acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

5. **Claims 1-16** are objected to because of the following missing articles or improper grammar. For example:

Claim 7 should recite "a quadrangular plate"

Claim 8 should recite "a different color"

Claim 9 should recite "both ends of the cross bar"

Claim 15 should recite "a thin plate."

The remaining claims should be reviewed for such problems and other existing instances of missing articles or improper grammar within the claims should be corrected. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1 and 12-14** are rejected under 35 U.S.C. 102(b) as being anticipated by Fukushima et al (US Pat No. 6120290).

8. In regard to **Claims 1 and 13**, Fukushima et al disclose an apparatus for measuring jaw motion comprising:

a pair of fixed markers, referred to as "LEDs" (17b,c), attached to the left side and right side of patient's face respectively, best seen in Figure 4 (Col.14, line 51-56);

a pair of movable markers, referred to as "LEDs" (18a-c), disposed to face the fixed markers in a spaced distance and moving in unison with the movement of the lower jaw of patient, best seen in Figure 4 (Col.14, line 57-61);

a coupling device for connecting the movable marker to the lower jaw of patient, referred to as "lower jaw frame" (18), best seen in Figure 4 (Col.14, line 57-61);

a plurality of cameras (12, 14) for recording the movement of the movable marker relative to the fixed marker, according to the movement of lower jaw (Col.15, line 1-10);

a control device, referred to as "computer system" (20), for receiving and processing the image signals fed from connected cameras (Col.15, line 1-10).

9. In regards to **Claim 12**, Fukushima et al further disclose a pointer, wherein a pointer is defined as another LED, to represent the center of rotation of lower jaw of patient on the surface of the fixed marker or the face of patient, wherein the pointer is alternatively attachable to the coupling device in place of the movable marker such that the substitution of one LED for another within the device of Fukushima et al is well within the scope of the reference.

10. In regards to **Claim 14**, Fukushima et al disclose the apparatus further comprising an orbital plane marker, referred to as "LED" (17a), attached to a specific location around patient's eye to measure an orbitales, best seen in Figure 4, and the orbitales is used to define the orbital plane.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al in view of Kim et al (US Pub No. 20020019258). Fukushima et al disclose the apparatus above including two cameras (12, 14) positioned at the side of the patient's face, best seen in Figure 3, to measure the three-dimensional movement of the movable marker relative to the fixed marker. However, Fukushima et al do not disclose the use of a total of four cameras. Kim et al disclose a motion detection system using four cameras to successfully track the motion of markers (abst). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Fukushima et al to include the use of four cameras, as taught by Kim et al, to enhance the jaw motion detection through the markers.

13. **Claims 3, 6, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al in view of Hedrick et al (US Pat No. 3662535). Fukushima et al disclose fixed, movable, and orbital plane markers (17a-c, 18a-c) as discussed above, wherein said markers are said to have the shape of a plate on any flat area, such as the tip. However, Fukushima et al do not disclose a borderline with a specific color provided at the edge. Hedrick et al teach the use of a colored border to distinguish a certain area from its surroundings (Col.4, line 45-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the markers of Fukushima et al to include a borderline with a specific color is provided at the edge of the fixed marker for the easy discrimination from the surroundings. In regards to **Claim 6** and the size of the movable marker (18a-c), it would have been an obvious matter of design choice to make the movable marker (18a-c) smaller than the fixed marker (17b-

c), since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

14. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al in view of Hedrick et al, further in view of Naoi et al (US Pat No. 5459793). Fukushima et al disclose the fixed marker (17b-c) has a corner point extraction marker, defined as the corners formed on the “head frame” (17) connected to each fixed marker, best seen in Figure 4, formed on the borderline for the extraction of corner point, wherein the borderline is defined as the boundary outside of said fixed marker, which is needed to establish the fixed marker local coordinate system. However, Fukushima et al do not disclose and the corner point extraction marker has a different color from the borderline. Naoi et al teach the use of differently colored markers for the extraction of various data (abst). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the corner point extraction marker of Fukushima et al as modified by Hedrick et al, to have a different color from the borderline to allow ease of distinction of various data.

15. **Claims 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al in view of Duret et al (US Pat No. 5143086).

16. In regards to **Claim 9**, Fukushima et al disclose a coupling device but are silent as to the specific construction of said device. Duret et al disclose an analogous jaw motion measuring apparatus with a coupling device comprising:

- a cross bar, best seen in Figure 12 as the portion of "cradle" (50) beneath "clamps" (52);
- a holding fixture, referred to as "fork" (54), best seen in Figures 12 and 16, one end of which is anchored on the lower jaw of patient and the other end of which is rotatably connected to the mid-point of the cross bar, wherein connection of said holding fixture to "rods" (53) connected to the mid-point of said cross bar enables rotational movement (Col.6, line 57-60);
- a pair of translation frames, referred to as "branches" (49), connected to both ends of the cross bar, best seen in Figure 12, in a manner that the translation frame can make translational and rotational movement (Col.6, line 51-55);
- a measuring frame, referred to as "rod" (53), one end of which is connected to the translation frame (49) in a manner that the measuring frame can make a straight motion in the orthogonal direction to the cross bar, and the other end of which is connected to an analogous movable marker, referred to as "sensor" (6), best seen in Figure 12 (Col.6, line 57-60).

17. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the specific features of said coupling device, as taught by Duret et al, with the jaw apparatus of Fukushima et al, to ensure the proper jaw movement necessary for the functioning of said device.

18. In regards to **Claim 10**, Fukushima et al disclose the movable marker (18a-c) where said marker is removably connected to the other end of the measuring frame.

19. In regards to **Claim 11**, Fukushima et al disclose in place of the movable marker (18a-c), a pointer is alternatively connected to the other end of the measuring frame to represent the center of rotation of lower jaw of patient on the surface of the fixed marker or the face of patient, wherein a pointer is defined as an LED such as that used as said movable marker and wherein the substitution of one LED for another is well within the scope of the reference.

Allowable Subject Matter

20. **Claims 5, 7-8 and 16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims as well as correction of the above minor objections.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Au (US Pat No. 4813436) and Kim et al (US Pat No. 6554706) disclose systems involving markers and cameras. Reusch et al (US Pat No. 6179612) discloses a jaw apparatus.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Nguyen whose telephone number is 571-272-8340. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HQN

6/23/2006



MAX F. HINDENBURG

SENIOR PATENT EXAMINER
TECHNOLOGY CENTER 3700